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Y.E.S. QUARTERLY



Y.E.S. Quarterly**Vol. 2, No. 2****ADVISOR**

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INFORMATION FOR AUTHORS

Manuscripts and original artwork on any insect or Arthropod-related topic are welcome for publication in Y.E.S. QUARTERLY. Articles with special interest to young entomologists will receive publication priority. Manuscripts may be of any length, but should be double-spaced and typed (or neatly written). Photographs or maps should be done in black and white, and any drawings, charts, or graphs or maps should be done in black ink and should fit in the new page size. All authors should supply a title for their article and a complete mailing address. We're sorry, but no page proofs can be furnished.

Other features, including news, field notes, book reviews or other illustrations, are also accepted and will be used when space is available.

Members may submit short "advertisements" for the "Trading Post" section, describing their special desires for information, correspondence or specimens. All ads will be edited for brevity and acceptability and their inclusion will be made on a space-available basis.

Send to: Young Entomologist's Society, c/o Department of Entomology, Michigan State University, East Lansing, MI 48824-1115 USA.

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REPORT FROM Y.E.S. HEADQUARTERS

Promotional Activities

I have been very busy trying to promote our Society and recruit new members. We now have a new supply of slightly revised (second edition) promotional brochures. These new brochures feature our logo on the front cover and have been printed on yellow paper. If you need brochures from distribution, just let me know and I'll send all you need!

Our Society was featured in the "Idea Exchange" section in the Spring 1985 issue of the Michigan 4-H "Leader Magazine." This particular issue was devoted to international programs, so we fit right in. In the near future, I plan to prepare a mailing of letters and promotional brochures to many of the U.S. Embassies and U.S. Information Centers, so they will know about our program. In the past we have had prospective members referred to us by these offices, so I think we need to capitalize on this opportunity.

Membership Activities

I have both good news and bad news (maybe) in the membership department. Our membership stands at 352 (as of 4/2/85), BUT only half of those members have renewed their membership for 1985 as of this date. I am a little worried because I don't know if this means members are dropping out, or if they're just late in sending in their renewals. If YOU haven't sent in your membership renewal for 1985, please do so as soon as possible, or this will probably be the last issue of Y.E.S. Quarterly you'll receive (since we will be reviewing the mailing list and purging "non-members"). (Just as a reminder: youth members- \$3.00, collegiate members- \$5.00, adult members- \$10.00 and sustaining members- \$25.00 per year).

If you have any comments (including criticisms) on our organization or magazine, please send them to me. I value your opinions and am always looking for ways to improve our Society. As a result of some members' comments, we will be seeking to include more artwork in our journal to break up the long articles. However, I must comment (and I can't emphasize this enough!!), we can only publish what the members send us. It is important to remember this. This is YOUR magazine, so send in a cartoon, poem, article, illustration . . . or whatever.

Since we published our 1984/1985 Member Directory (Misc. Publ. No. 1), we have had both current and new members request a listing. I have prepared a list of new information so you can update your Directory. We have also had additional

people volunteer to act as "section advisors," and they will be happy to help you with your questions, problems, or other entomological needs.

One final item related to membership. One of our members suggested we consider having an "emeritus" category for members over the age of 65. I like the idea, but I need to get more opinions from the membership. Actually, two decisions need to be made: (1) do we create an emeritus category? (2) should emeritus members get a complementary membership, or be offered a membership at a reduced rate (like \$3.00/year)? Remember, these members have lots of experience to share with our group. So, think about this idea. We will probably send out a ballot with our 1986 renewal notices at the end of this year. Meanwhile, if you have any special comments you'd like to make (either for or against this idea), I would be glad to make space available in Y.E.S. Quarterly for "Letters to the Editors."

Special Project Opportunity

I recently became aware of a group known as the Sigma Firefly Scientists Club, sponsored by the Sigma Chemical Co. The Sigma Firefly Scientists Club will begin its 25th Anniversary Firefly campaign this May. Catching fireflies offers an excellent opportunity for youngsters to earn money while having fun. It also ensures that scientists around the world have a steady supply of the chemicals extracted from the firefly. These chemicals have been used in the fight against cancer, the search for life on other planets, as well as the diagnoses of human ailments. Many 4-H clubs have used this project to raise funds for their activities.

A club brochure is available that explains the program in detail. It includes tips on catching fireflies, pay rates (\$1.00/100 fireflies), method of delivery, and how to obtain nets and firefly containers. If you have any questions concerning this program, write to the Sigma Firefly Scientists Club, Sigma Chemical Co., P.O. Box 14508, St. Louis, MO 63178 USA, or call 1-800-325-3010, extension 433.

Gary A. Dunn, M.S., R.P.E.
Extension Specialist and Y.E.S. Advisor

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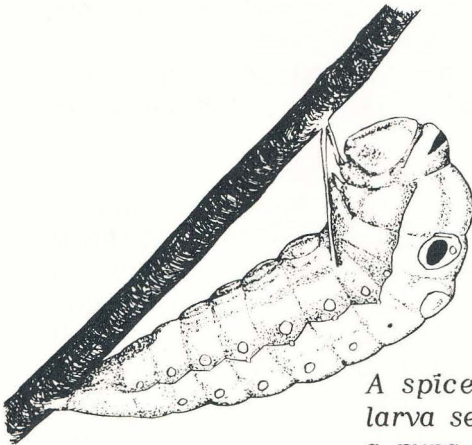
WHAT IS A SAC SPIDER?

Steven Gades
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The sac spider (Araneae: Clubionidae) can be found in a rolled up leaf on three lowest branches of large trees. This family is related to the ant-mimicing spiders that prey on ants. The sac spiders seem to have a preference for foliage as a retreat. They are easily collected from these retreats. I simply cut or gently break the leaf stem and then unroll the spider's retreat to remove the specimen.

Indoors, these spiders are seen running on walls and ceilings, clinging to the smooth surfaces with the aid of their claw tufts. (Claw tufts are also found on the tarsi of the jumping spiders (Salticidae) and crab spiders (Thomisidae). However, not all hunting spiders have these tufts). I found a specimen of the sac spider Chiracanthium sp. in the late spring at my home in the mailbox! The spider was alive but refused to move outside of its silk retreat.

Another family of spiders, the Anyphanidae, also live in rolled-up leaves on trees, shrubs, and other plants. However, these spiders can be distinguished from the clubionid sac spiders by the dark abdominal markings (blotches) and by the placement of the tracheal spiracle.



A spicebush swallowtail (Papilia troilus) larva several hours away from becoming a pupa. It has attached itself to a twig with silken strands and is preparing to shed its final larval skin.
submitted by Paul Castrovillo--Boise, Idaho

THE OREGON RAIN BEETLE

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In Oregon, fall means rain. and rain means rain beetles! This large scarab, Pleocomma spp., is quite harmless and interesting to entomologists and other observers because of the buzzing flight of the males.

When the rain falls and the soil gets wet, the sound of the flying male rain beetles can be heard. As larvae rain beetles live in the soil and feed on tree roots. After eight to ten years underground, the adult beetles emerge ready to mate. The female waits at the entrance to the burrow, sending out an odor to attract the flying males. After mating, the female goes back into the burrow to lay her eggs. Then, a decade later, her "children" will come out to repeat the cycle.

Timing is important to the collector who wishes to catch rain beetles. The right time in western Oregon is late September to mid-November, after about a week of rain.

Two years ago, I found myself following the hairy dark brown wing covers and clear wings of a one-inch long male rain beetle. I ran wildly and waved my net over the land, which I knew contained a light brown hairy one and a half-inch female rain beetle. Soon crowds of males were buzzing all around me and I was truly in an insect collector's paradise! After netting several males, I looked for a small hole in the earth under some buzzing males, and dug down to find a large female.

Last year I arrived at the same wooded area with high hopes; but I had waited too long and didn't even catch a glimpse of those shining wings!

References

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IMPORTANCE OF SYSTEMATIC COLLECTING

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For the past two years, I have conducted a Lepidoptera survey at the Lloyd Center of Environmental Studies in South Dartmouth, Massachusetts. Sampling during the first season concentrated on moths, which were collected with a mercury vapor light trap. This year I was able to expand the study to include butterflies. The acreage surrounding the Lloyd Center is mostly mature woodland, therefore sporting a limited butterfly community. I wanted to survey a site which had diverse habitats and would have flowers in bloom for nectaring sites throughout the season. I remembered such a site from my childhood collecting expeditions. It is an abandoned gravel pit and old logging road which is now conservation land located in New Bedford, Massachusetts. This locality borders Plainville Road, north of the New Bedford Airport and the southern edge of the Acushnet Cedar Swamp. This area, which includes both wetlands and uplands, has a variety of successional stages from meadows and old fields to oak-beech forests, and from cranberry bogs and shallow sedge swamps to shrub, willow, and red maple swamps, and finally to white cedar and hemlock swamps. I remembered numerous monarchs, sulphurs, and swallowtails visiting the abundant goldenrod and sweet pea blooms, but no unusual species from this area came to mind. Nevertheless, I thought that this would be a good spot to conduct a bi-monthly survey.

My initial visit in April to this site confirmed my optimism. Although the number of butterflies was scant, I captured two day-flying moths, Brephos infans (Geometridae) and Psychomorpha epimenis (Agaristidae), neither of which had I previously ever encountered. Spring was well enough advanced so that recognition of much of the flora which would be providing flowers throughout the season was possible, allowing the following general description.

The dirt road which runs from Plainville Road through the former gravel pit is bordered by a red maple/willow swamp along the west side and by an assortment of shrubs, particularly pussy willow, birch, sweet pepperbush, blueberry, meadowsweet, and sweet fern. Interspersed were patches of sweet pea, wild indigo, vetch, and an array of composites such

as asters and goldenrods. Assorted sedges, rushes and reeds colonized the semi-permanent wetlands east of the road. The trail passes through a small wooded area, primarily oaks and maples on the east side, and fire and other cherries on the west side. A loop branches east of the main trail, eventually reconnecting with it after passing through a large shallow temporary pond. Most of this spur passes through a large open area colonized with sweet pea, vetch, clovers, bouncing bet, goldenrod, narrow-leaved mountain mint, sunflower, Queen Anne's lace, and numerous other herbaceous plants. North of a cranberry bog at the reunion of these trails, the road enters a beech-oak forest which quickly descends to the hemlock and white cedar of the Acushnet Cedar Swamp. A round-trip to the edge of the Cedar Swamp could be accomplished in one to two hours, depending on the abundance of butterflies encountered. Clearly the variety of habitat and succession of flowers promised a good selection of butterflies.

Table 1 lists the forty-three species (scientific nomenclature from Hodges, 1983) collected or positively sighted, and the perspective occurrence dates for all visits during 1984. This represents nearly fifty percent of all species likely to be found in southern Massachusetts (estimate from ranges in Opler, 1984). The importance of repetitive visits to a given site in order to accurately describe the butterfly fauna is evident, as the majority of species occur only for a short period during the season. Some species, such as the broad-winged skipper (Poanes viator) appeared only once, although it was common on that day. In order to determine flight periods, even shorter collecting intervals would be necessary. Future collecting trips will undoubtedly turn up more species, as can be seen from a plot of the number of new species encountered versus the number of collecting trips (Figure 1). The trips have been ordered in a random sequence so that the effects of seasonal variation in species occurrence and abundance is minimized. As one approaches the total number of species present in a given area, the curve would flatten out thus no additional collecting trips would add new species. In Figure 1, the extrapolated curve continues to slowly rise, suggesting that there are species which have not been encountered. For example, the painted lady (Vanessa cardui) and the question mark (Polygonia interrogationis) are generally common in southeastern Massachusetts, but neither were observed during 1984. I am sure these will eventually turn up this coming season.

The broad-winged skipper and the white-m hairstreak (Parrhasius m-album) are of particular interest. The former is local and sporadic, usually occurring near salt or brackish

marshes along the east coast. At this site, it appears to be associated with fresh wetlands. The white-m hairstreak has only recently shown up in Massachusetts (Edwards, 1980) and is included on the Massachusetts Natural Heritage Program's list of rare and endangered species for the state (Schweitzer, 1982; Harding, 1983). Both species are at or near the northern limit of their range.

Regular trips to the same locality may also reveal different behavioral patterns of certain species which have extended flight periods. For example, the common wood nymph (*Cercyonis pegala*) was observed from July 15 through September 9. Usually this species pays no attention to flowers. However, on July 29, the blossoms of narrow-leaved mountain mint (*Pycnanthemum tenuifolium*) were covered with nectaring wood nymphs, as many as four butterflies on each head. Even though these plants were in bloom both before and after this date, and other species continued to nectar at these plants, this was the only date that Wood Nymphs were observed nectaring.

In conclusion, the importance of a repetitive sampling program at a single site containing an array of habitats has been demonstrated, both for determining community structure and behavioral patterns of the resident butterflies.

Figure 1. Graph of number of new species of butterflies encountered on successive (randomized) collecting trips at Plainville Road, New Bedford, MA.

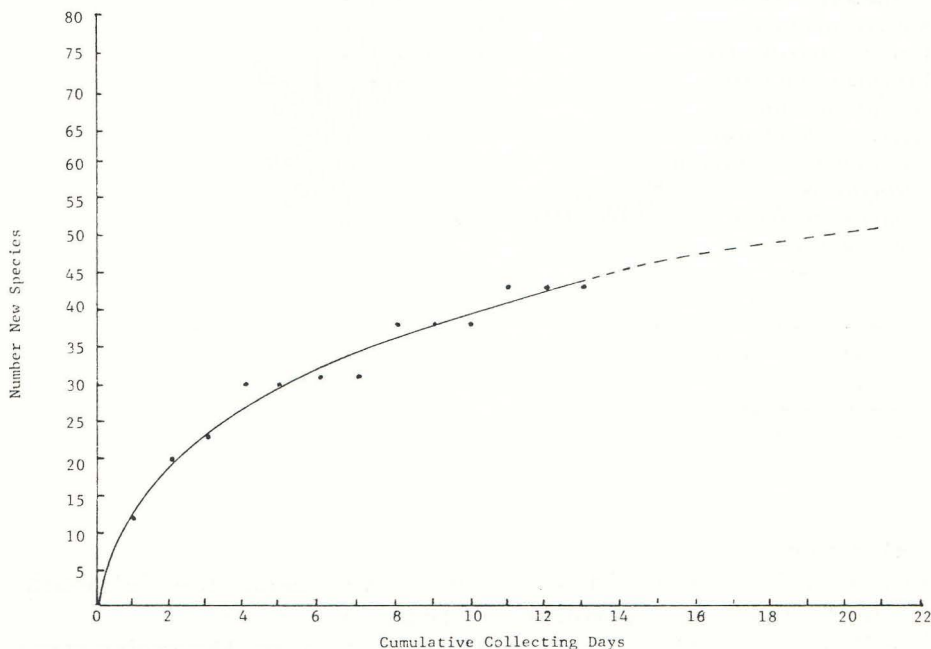


Table 1. Capture dates for the 83 species of butterflies and skippers caught during 1989 at the Plainville Road conservation area (abandoned gravel pit) in New Bedford, MA.

	April 30	May 7 22	June 4	July 2 15 29	Aug. 14 26	Sept. 9 23	Oct. 10 23
<i>Nymphalis antiopa</i> (Mourning Cloak)	X	X X	X			X	
<i>Lycanopsis pseudargiolus</i> (Spring Azure)	X	X X	X				
<i>Incisalia niphon</i> (Pine Elf)		X					
<i>Vanessa atalanta</i> (Red Admiral)		X		X			
<i>Erynnis brizo</i> (Sleepy Dusky Wing)		X					
<i>Erynnis icelus</i> (Dreamy Dusky Wing)		X X	X				
<i>Erynnis juvenalis</i> (Juvenal's Dusky Wing)		X X	X	X X		X	
<i>Lycæna hypophlaeas</i> (American Copper)		X X	X	X X X	X	X	
<i>Pieris rapae</i> (Cabbage Butterfly)		X X		X X X	X X X		
<i>Papilio troilus</i> (Spicebush Swallowtail)			X X	X X X	X X		
<i>Phycoides tharos</i> (Pearl Crescent)			X X	X X X	X X X		
<i>Colias philodice</i> (Clouded Sulphur)			X X	X X X	X X X	X X	X
<i>Erynnis baptisiae</i> (Wild Indigo Dusky Wing)			X				
<i>Megisto cymela</i> (Little Wood Satyr)			X	X	X		
<i>Polites peckius</i>			X			X	
<i>Lycæna epixanthe</i> (Bog Copper)				X			
<i>Thorybes bathyllus</i> (Southern Cloudy Wing)				X			
<i>Polites verna</i> (Little Glassy Wing)				X			
<i>Polites mystic</i> (Long Dash)				X			
<i>Polites themistocles</i>				X X			
<i>Thymelicus lineola</i> (European Skipper)				X X			
<i>Papilio glaucus</i> (Tiger Swallowtail)				X			
<i>Papilio polyxenes</i> (Black Swallowtail)				X X			
<i>Satyrus acadicum</i> (Acadian Hairstreak)				X X			
<i>Satyrus calanus</i> (Banded Hairstreak)				X X X			
<i>Speyeria cybele</i> (Great Spangled Fritillary)				X X X			
<i>Ancylophya numitor</i> (Least Skipper)				X	X X X		
<i>Basilarchia archippus</i> (Viceroy)				X	X X X X X		
<i>Everses comyntas</i> (Eastern Tailed Blue)				X X X	X X X X X		
<i>Colias eurytheme</i> (Orange Sulphur)				X X X X X	X X X		X
<i>Euphydryas phaeton</i> (Baltimore)				X			
<i>Atrytone delaware</i> (Delaware Skipper)				X X			
<i>Vanessa virginiensis</i> (American Painted Lady)				X X X			
<i>Cercyonis pegala</i> (Wood Nymph)				X X X X X			
<i>Strymon melinus</i> (Gray Hairstreak)				X X	X X		
<i>Harkenclenus titus</i> (Coral Hairstreak)				X			
<i>Parrhasius m-album</i> (White-M Hairstreak)				X			
<i>Poanes viator</i> (Broad-Winged Skipper)				X			
<i>Epargyreus clarus</i> (Silver-Spotted Skipper)				X			
<i>Basilarchia anthemis</i> (Red-Spotted Purple)				X			
<i>Danaus plexippus</i> (Monarch)				X		X	
<i>Wallengrenia otho</i> (Broken Dash)				X X X			
<i>Hesperia leonardus</i> (Leonardus Skipper)					X X X		

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LIGHTS! CAMERA! BUGS!

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Turning on the television or going to the movies often opens a Pandora's Box of Hollywood creepy-crawlers. Arthropods are consistently portrayed as monsters in horror movies and

adventure films. Unfortunately, such typecasting only reinforces the public's stereotypes, myths, and irrational fears.

Hollywood distorts animals in a variety of ways. A typical horror effect is to greatly exaggerate size. The more impressive results include the ten-story tall spider in "Tarantula" (1955), and the monstrous mantis in "The Deadly Mantis" (1957). "The Black Scorpion" (1957), and the British film "Clash of the Titans" (1981), featured huge scorpions. Enormous ants starred in "Them!" (1953) and "The Empire of Ants" (1976). The Japanese created "Mothra" (1961), then pitted the colossal moth against a horror legend in "Godzilla vs. the Thing" (1964). Larger-than-life, man-eating cockroaches were one of the hazards in "Damnation Alley" (1977).

An alternative to gigantism is to overwhelm audiences with hordes of individuals. "Killer" bees have mobbed cities and towns in "Terror Out of the Sky" (1978), "The Swarm" (1978), and others. Armies of ants have paraded across the screen as well, with "Phase IV" (1974) being one example. Solitary arthropods are also impressive en masse. The huge but harmless Madagascan hissing roach is a favorite. The heroine of "Indiana Jones and the Temple of Doom" (1984) found herself covered with them in one cavern scene. In "Bug" (1975), these insects were endowed with pyrotechnic powers, setting fire to buildings, and people! In the Japanese production "Genocide" (1968), insects of all kinds launched a mass attack on humanity. "Kingdom of the Spiders" (1977), despite its plot, was a well-intended warning against man's abuse of nature, showing nearly 5,000 tarantulas as colonial, highly venomous killers, swathing whole buildings in silk.

An exception to the distorted portrayal of insects is "The Amazing Spider-Man" of comic book and television fame. Yet, even this hero stands alone. The mythical merger of man and beast usually results in nightmarish evildoers. Vampires and werewolves are popular examples, but a half-human/half-Dipteran villain starred in the science fiction thriller "The Fly" (1958) and its sequel, "The Return of the Fly" (1959). In the television movie "Killer Bees" (1974), one actress played the role of a human queen bee, and in "The Curse of the Black Widow" (1977), the leading lady metamorphosed into an immense, man-eating spinster.

It may be concluded that screenwriters and special effects wizards find arthropods offensive. Why else would they make them appear larger, more numerous, and more dangerous than they are? Still, the public learns only fables about a few species.

Most importantly, many other animals suffer the same mistreatment Hollywood applies to insects. The persecution of

wolves, sharks, wildcats, bears, bats, and gorillas is due in large part to their screen images as bloodthirsty man-killers. Represented as enemies of humanity in the cinema, they are always conquered, encouraging the doctrine of man's dominance over all species. The alternative of coexistence is ignored.

The invention of video cassettes, discs, cable television, and dish antennas has meant a much wider distribution of fictional motion pictures, without a corresponding increase in the broadcast of factual documentaries. Most educational programs are confined to the Public Broadcasting System in the United States, where they draw a limited audience, usually well-versed in the facts already.

It is the responsibility of those who know better to remind the public of the truth. Also, film-makers can be criticized and pressed to reform. By setting examples of proper respect for all wildlife, citizens can upstage the movie "heroes" who kill and abuse animals.



USING VINEGAR AS BAIT IN PITFALL TRAPS

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Entomologists often use pitfall traps to capture insects that are particularly difficult to capture with other methods, to capture specimens for faunal surveys, to study the abundance of species during different periods of the season, or for other similar studies. There are many kinds of pitfall traps. Some are

sophisticated, while others are quite simple.

I have tried all kinds of traps to capture beetles over the years. Since my interest is in the Carabidae, I use those pitfall traps that facilitate the capture of these beetles. I have corresponded with many American entomologists and to my surprise, I found that very, very few know about baiting pitfall traps with vinegar. In Europe, this kind of trapping is very common among entomologists. I have captured many species with this kind of trap. Vinegar attracts not only Coleoptera, but also many other orders of Arthropods. I have caught the following in my traps: Coleoptera, (Carabidae, Silphidae, Catopidae, Ptiliidae, Scaphidiidae, Staphylinidae, Pselaphidae, Histeridae, Elateridae, Dermestidae, Nitidulidae, Ptinidae, Anthicidae, Meloidae, Tenebrionidae, Scarabaeidae, Lucanidae, Chrysomelidae, Bruchidae, and Curculionidae), Lepidoptera (Satyridae, Noctuidae, and Geometridae), Ephemeroptera, Blattodea, Isoptera, Plecoptera, Embioptera, Dermaptera, Orthoptera, Rhynchota, Neuroptera, Mecoptera, Trichoptera, Diptera, Chilopoda, Arachnida, (Scorpiones, Pseudoscorpiones, Opiliones, Araneae, and Acari), Diplopoda, Isoptoda and Hymenoptera (Formicidae). (NOTE: The underlined orders and families are those captured with the greatest frequency).

Pitfall traps are simple and very easy to use. They consist of a container (plastic cups, jars and just about anything other than metal), placed in the soil, the rim flush with ground level. After the container is in the soil, fill it 1/3 full with vinegar. After doing this, find some small stones and place them around the cup (3 stones is sufficient). When this is done, place a big stone on top of the little stones (Fig. 1).

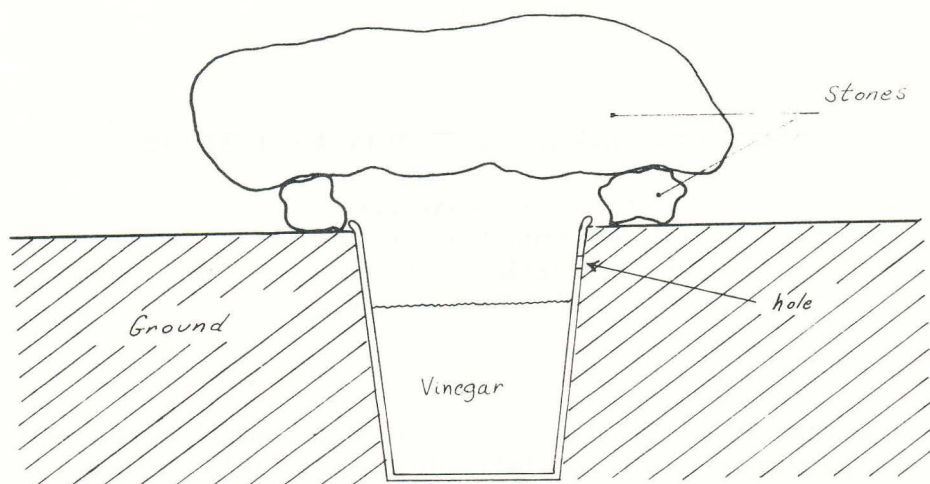


Fig. 1. Pitfall traps using a jar.

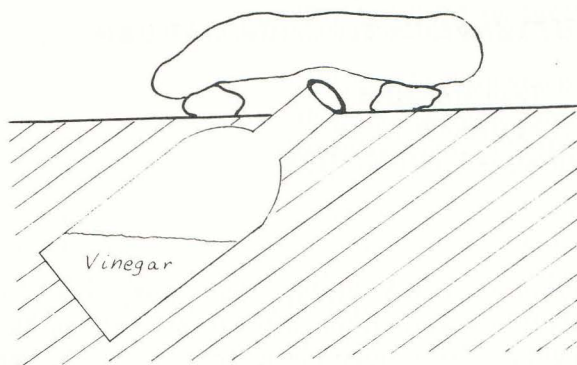


Fig. 2. Pitfall trap using a bottle.

escape from the trap. To avoid this, I recommend that you make a hole on the top of the cup, so the water gets out before it reaches the cup's rim. I use bottles (Fig. 2) instead of cups, and find them less time consuming

compared to cups. When I set pitfall traps, I often use small bottles. I first fill them with vinegar, and then place them in areas where I think are best for capturing insects.



Where to Place Pitfall Traps

Since I use pitfall traps to capture Carabidae, I place them in the habitats of these beetles. Good places to set traps are woods, along paths, near streams, beside logs, near lakes, and even in cultivated fields. Almost anywhere is good, even in your back yard!

I recommend that you check the traps at least once a week. The best way to remove the trapped specimens is with a strainer (Fig. 3).



Editor's Note: Anyone desiring additional information about trapping with vinegar bait is welcome to write to the author, Cesare Iacovone.

It's important to cover the traps. This prevents them from filling with water when it rains. It also prevents mammals from destroying the traps. Even covered traps can fill with water. If this happens, the cup will overflow and the insect specimens can

ATTRACTING BUTTERFLIES TO YOUR GARDEN

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Construction has claimed many fields that were once a source of food for butterflies and other insects as well as the foodplants of their larvae. To compensate for this loss, we must grow these flowers in our gardens. You will receive pleasure and invariably take great pride in the fact that you have helped nature, and nature, in return, will show you her beauty. Here are a list of flowers, flowering trees, and shrubs you will find useful in attracting butterflies:

strawflowers	petunias	thistle
alyssum (white)	phloxes	maple (for sap)
candytuft	Sweet William	mimosa
cosmos	lantana	apple
daisies (white)	milkweed	lilac
marigolds	purple sage	butterfly plant
goldenrod	delphinium	azalea
heliotrope	honeysuckle	rhodendron
butterfly bush (Buddleia)		

Once you have attracted the butterflies to your garden you may find it helpful to have plants and trees near the garden for the female to lay her eggs. Such plants include:

asters	dill	wisteria
carrots	mint	milkweed
clover	parsley	weeping willow
columbine	violets	spicebush
beans (green, yellow)		apple

Hopefully, you will get to observe the life cycle of some of the butterflies that you attract to your garden. You may want to photograph the stages of this fascinating cycle.

A VISIT TO THE INSECT ZOO

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Last summer, I went to the Washington Park Zoo in Portland, Oregon. One of the neat things about this zoo is the Insect Pavillion. I got to hold a humungous grasshopper in my hand. It didn't hurt or feel bad, and the grasshopper didn't try to jump away from me. I was also able to hold a huge cockroach from India. I felt kind of scared because I didn't know if it would bite me or not. It didn't.

The most exciting thing was being able to hold a real live tarantula! It was large and hairy and a light brown color. I held my hand very still and it didn't try to crawl away. I also saw a six-inch long walking stick, water beetles, and some beautiful butterflies with bright blue wings from Brazil.

One of the things that I especially liked were the people working at the Insect Pavillion. They were really friendly and nice to everyone. Also, they give talks and demonstrations for the children and adults. They always ask the children to hold their hands still before letting them hold an insect. If you say you can, they trust you. I never saw any child drop one of the insects.

A WORD PUZZLE

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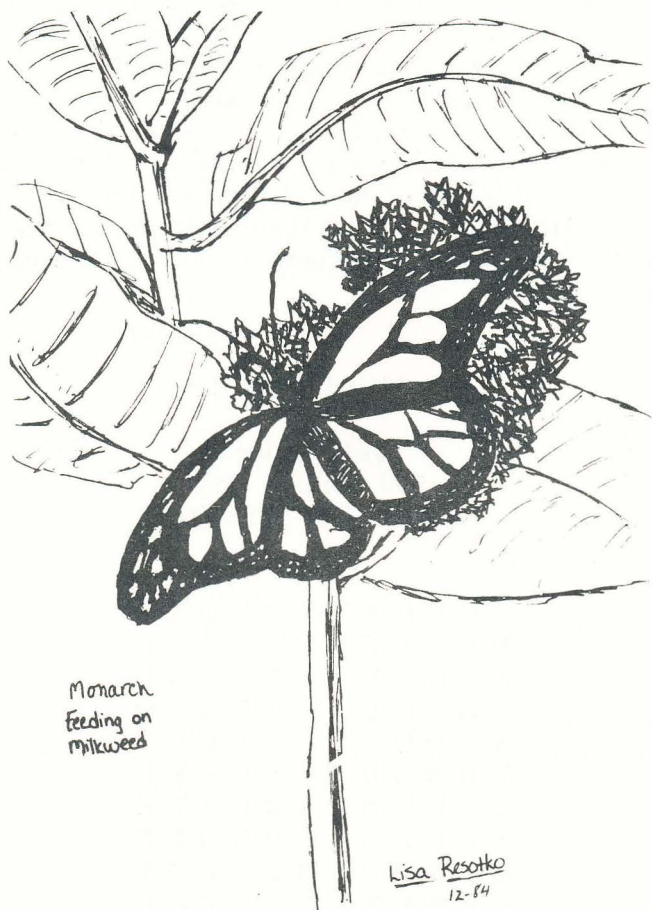
J O D K A T Y D I D S A
 M R O T E R M I T E C L
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 A A S Q E A R W I G L O
 Y C O Q S D P I A F E B
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 L A F E X I A W I K P E
 Y F L E A S T U B D E E
 G Z Y V N F H O E U R T
 C N F I T L I C E T G L
 E D A L O Y R M O T H E
 M A N T I D P R I F L Y

Note: The answers will be supplied in the next issue.

REARING BUTTERFLIES IN CAPTIVITY

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Before you consider rearing a species of butterfly, you must consider the availability of the necessary foodplant. If the foodplant isn't found in your backyard, it would be wise to look in nearby fields. If you find the plant nearby you can start to look on its leaves for eggs and caterpillars, otherwise you can purchase them in a biological supply house or find a fertile female. Sleeves (Fig. 1) can be used to hold the caterpillars, particularly if you have a large brood that feeds on a type of tree.



Monarch
Feeding on
milkweed

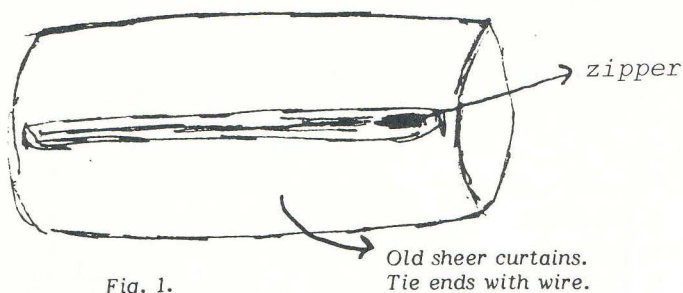


Fig. 1.

Another method that I have found effective is making cuttings of the plant and placing them in yogurt cups containing water. The holes through the lid of the cup should be just large enough for the stem of the cutting to fit through, otherwise, the larvae may fall into the water. I then place the yogurt cups in a fishtank (Fig. 2) with a mesh screen covering it. Make sure the sleeve and fishtank are free of frass (droppings) everyday so that the larvae do not become diseased. Limiting the number of caterpillars will ease the problem of frass.

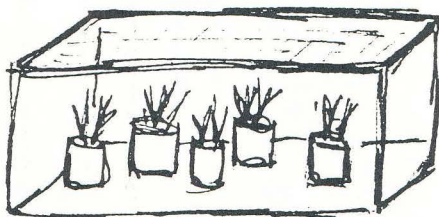


Fig. 2.

As the caterpillars grow in size, they devour the cuttings and leaves at a faster rate. Consequently, you have to change the sleeves and get fresh cuttings almost every day, depending on the size of the brood and the sleeve or cage. For this reason, if you plan to raise over fifty caterpillars at once, I suggest doing so only if you have access to an abundance of the foodplant. I have also found out that the caterpillars should be exposed to sunlight as well as shade to simulate their natural habitat. This is especially true when they have entered the chrysalis stage. The chrysalises should be placed in sunlight for part of the day. If they are placed in direct sunlight, I recommend misting them so they don't dry out. The exposure to heat will also encourage them to emerge early.

Once the butterfly has emerged, you may want to release it or keep it for further breeding. If you choose to keep it, you may want to use a small cage made of netting, one or two old lampshades or wood (Fig. 3). These cages can be put outside during the day and put under shelter at night. If you plan to breed various types of butterflies in large quantities, you should build an outdoor "house" (Fig. 4) if you have the room. The house my father built consisted of 2 x 4's and 4 x 4's (treated)

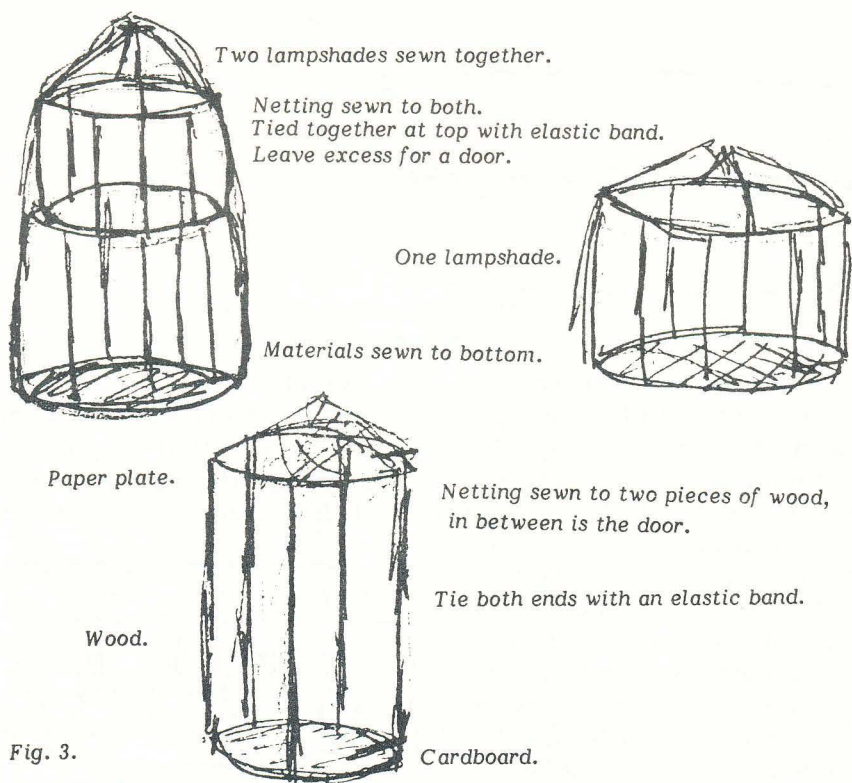


Fig. 3.

and garden netting (used to protect trees from birds) was stapled to the frame which was 10 x 10 in size (large enough to walk in). The overall cost of the house was \$30 (three years ago) and allowed the butterflies to fly freely in the sun or sit on their favorite flowers as they would in the wild.

I tried to rear Monarch caterpillars in the "house," but stinkbugs and spiders ate them and it was also impossible to keep track of them because they would hide on other plants. The walk-in house doesn't encourage the butterflies to flap their wings endlessly against the sides of the cage as they do when they try to find a way back to freedom as they do in smaller cages.

When I see the butterflies flying from flower-to-flower and sunning themselves it makes me feel good that I am providing them with both shelter from the birds and an abundance of food. If flowers aren't in season when your butterfly hatches, they will readily accept a sugar solution on cotton. A sliced apple is preferred by sap-eating butterflies like the Mourning Cloak. The longest period of time that I kept a butterfly alive in captivity was a Monarch last year that lived from September to the end of November. I usually release Monarchs that I have raised for breeding and when they can't fly (as in the case of this butterfly). Even though her wings were damaged at birth, she managed to crawl over to her sugar solution and feed

herself and climb back up her cage, and occasionally she would try to fly. She lived so long mainly because she was put in the sun every day. I have saved many butterflies that looked as though they were going to die any minute by putting them in the sun or under a lamp. The heat starts their circulation again.

I first became interested in butterflies at age seven, and now I'm fifteen years old. Through my rearing of butterflies, I have grown to love and appreciate nature, and my family too has become more aware of nature's beauty.



PRESERVATION AND EXCHANGE OF SPIDERS

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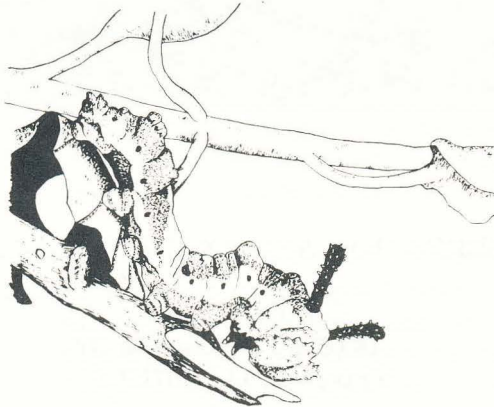
Many professional arachnologists are willing to identify spiders if you are willing to demonstrate if you are a serious collector and send them properly preserved and packaged specimens. They will often be interested in bulk samples to aid them in their research, but they will probably identify single

specimens as well.

The most appropriate way to preserve spiders is to place them in a solution of 70-80% alcohol to prevent decay. Ethyl alcohol is preferred, but isopropyl (rubbing) alcohol works well, and since it's readily available in stores, it's frequently used. Some arachnids, especially harvestmen (Opiliones), do become distorted when placed in 70% isopropyl alcohol (probably because it evaporates water). By changing the dilution ratio to 50% water and 50% alcohol, you can usually avoid distortion and discoloration of spider specimens. It is best to place only a single specimen in each vial. Remember, also, to include a complete label prepared with indelible ink.

The mail is the most convenient method for exchanging spider specimens. Overseas mail usually can't contain alcohol, but check with your postal service for the specific regulations. Also, if you're travelling, you may not be able to carry live specimens across international borders, so check with the appropriate authorities about quarantine regulations.

When you do mail specimens, place the vials in the center of a much larger box and pack it with sufficient padding to prevent damage. Styrofoam chips work best, but you can also use excelsior, crumpled paper, cotton waddings or plastic air-bubble sheets. If your package contains more than one vial it is very important to be sure there is sufficient padding between the vials to prevent breakage.



A viceroy butterfly (Limenitis archippus) larva perched on a birch leaf. These caterpillars are found in the eastern U.S. feeding on birch and willow. Their mottled coloration and "lumpy" form make them look like a bird dropping.

Submitted by Paul Castrovillo--Boise, Idaho

THE MALAISE TRAP: A LAZY WAY TO COLLECT FLYING INSECTS

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I have been observing and collecting insects since I was about 10 years old. I have always enjoyed tracking the insects outdoors and learning the habits of those that I wished to collect. However, when I entered graduate school to study entomology, I found that I could not spend the amount of time that I was used to collecting new insect families. It was at this time that I became interested in the use of traps which would allow me to collect with less time spent in the field. One of the most efficient traps that I have ever used is the Malaise trap which acts as a flight barrier. Many insects will try to fly up and over any obstacle they encounter. When they strike the barrier panel of a Malaise trap, they fly upward into the peaked roof where they are funneled into a container (that contains either a liquid killing fluid or a fumigant type poison) from which they may be collected at your convenience. I have been using Malaise traps for the last 6 years and have been impressed with the variety of insects caught.



The trap that I have been using is the Henry Townes style (Townes, 1972) of Malaise trap. This trap has a long, black vertical panel which forms a barrier across natural flight paths (Fig. 1). Insects striking the barrier panel are directed upwards into the peaked roof where they eventually enter the collection jar. I use Kahle's fluid (Borror et. al, 1976) to kill and preserve the insects. This allows me to collect the specimens just once each week, as it does not evaporate as fast as 70% alcohol alone. The formula is as follows: 420 milliliters (ml) 70% ethyl alcohol, 120 ml formaldehyde (40%), 40 ml glacial acetic acid and 480 ml water (distilled possible). All of these ingredients should be available from a drug store. The disadvantage of using a liquid collecting fluid is that insect body hairs may remain matted down or stuck together after pinning. This may sometimes hinder identification and makes some insects, such as Lepidoptera, look a bit ragged. However, fumigant poisons must be recharged frequently and the insects collected often are damaged because the poison acts slowly and they try to fight it. The type of killing system to use depends on the groups of insects you are most interested in collecting.

Thus far I have constructed all of my traps following the directions given by Townes (1972) in his articles. He provides a complete list of materials needed and good directions for the construction of the trap. Building the trap does not require much skill other than being able to operate a sewing machine. However, the large size of the trap means that the construction and assembly will take a considerable amount of time, maybe 15 hours. The cost will vary depending on the specific materials you use, but for me it has been about \$50-60 per trap. If you have trouble finding the nylon material in a fabric store, it is possible to use sheer Dacron drapery panels available from stores such as Sears and Penneys. It is also possible to buy Malaise traps already made from Bioquip Products (P.O. Box 61, Santa Monica, CA 90406), but these are rather expensive at \$198 each. In addition, the collection jar assembly they provide doesn't allow you to collect the insects into a fluid (cyanide or Vapona must be used) although I believe a homemade jar holder assembly could be substituted for theirs (a trap without a jar holder is only \$122). With care the nylon material used in the traps should last 3 to 5 years before the ultraviolet light from the sun degrades the material. But in this time, you can catch literally thousands of interesting specimens.

The kinds and number of insects caught in a Malaise trap depends a lot on where the trap is set up. Probably the greatest diversity of insects are caught when the trap is placed on the border between a large, well-established woodlot and an open field with plenty of wild flowers. Other interesting sites are

along the margins of streams or ponds, or along paths through densely wooded areas. Any location will turn up interesting insects if you remember to orient the trap to intercept natural flight paths (such as trails or hedge margins). Be sure to place the jar end of the trap furthest away from the vegetation. This will increase the amount of light in the jar making the insects move to the jar more rapidly. Don't forget to get permission to set up your trap on private land and check state/federal regulations about collecting on public lands. It is also a good idea to put a tag on your trap with your name and phone number in case anyone has any questions about your activities.

Dr. Quentin Wheeler at Cornell University suggested a method to increase the catch of a Malaise trap even further. If you place a trough containing some sort of a collecting fluid at the base of the long black barrier panel, insects which tend to drop to the ground upon striking an obstacle (such as many Coleoptera) will be caught as well. Although I have not tried this yet, I think that a trough could be easily constructed by cutting a piece of PVC tubing (get from a plumbing supply store) length-wise with a jig-saw and then gluing a piece of plexiglass across each end. A good collecting fluid (very slow evaporating) which could be used consists of 600 milliliters water, 400 ml ethylene glycol (car antifreeze), 5 ml formaldehyde, and 1 ml liquid detergent.

As I mentioned, a Malaise trap catches an amazing variety of insects. The largest percentage of the catch will be Hymenoptera and Diptera. All other orders with winged members will occasionally be caught depending to a certain extent of the trap location. You will also find many walking creatures, such as spiders, ants and immature grasshoppers. Some of the most interesting and uncommon families that I have trapped are listed below.

Hymenoptera-	Xiphydriidae,	Pamphiliidae,	Cimbicidae,
	Sapygidae,	Peleciniidae,	Ibaliidae,
	Evaniidae,	Heloridae,	Aulacidae,
	Roproniidae,	Leucopsididae,	Dryinidae,
	Bethylidae,	Rhopalosomatidae.	
Diptera-	Xylomyidae,	Xylophagidae,	Diopsidae,
	Platypezidae,	Acroceridae,	Therevidae,
	Conopidae,	Micropezidae.	
Coleoptera-	Eucnemidae,	Phengodidae,	Lymexlonidae,
	Anthicidae.		
Mecopera-	Meropidae		
Hemiptera-	Aradidae		

As with most collectors, I have a very limited amount of space for expanding my collection. This means I must be selective in what I keep from my Malaise trap, leaving me with large numbers of extra insects. I have found that university entomology departments which maintain insect collections are very grateful to receive this extra material as long as you supply complete collecting data.

If you would like more information or are having trouble finding Dr. Townes' article, feel free to write me. Also if any of you should decide to construct and operate your own traps I would be very much interested in trading material.

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MEGACEPHALA EUFRATICA DEJEAN: THE ONLY MEGACEPHALA SPECIES OF THE PALEARCTIC FAUNA.

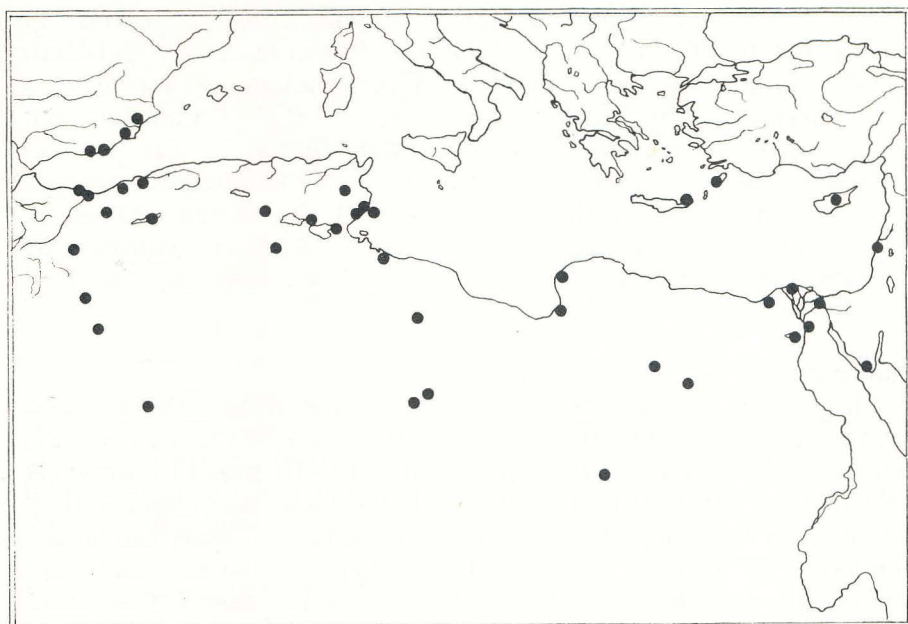
Cesare Iacovone
Via Diacommo Noventa No. 12
Scala I-int. 3
00143 Roma, Italy

Megacephala eufratica Dej. is the only species of the genus Megacephala which occurs in the palearctic region. The range of this species is quite discontinuous; it is distributed from North Africa to Asia, and in Europe is found only in Spain and Greece (Creta and Rodi Islands).

This species was described by Latreille and Dejean in 1822. M. eufratica has also been cited as Grammognata Motsch. or Tetracha Hope, with species synonyms such as algerina Guer. (1846), armenica Cast. (1834), nigra Horn (1899) and euphratica Bedel (1895).

Distribution

As figured in the following map, the distribution of M. euphratica is discontinuous. Evidently, the species was widely distributed in the Tertiary period. It is found in all of North



Distribution of Megacephala euphratica Dej. in the Mediterranean area.



Megacephala euphratica

Africa, from Morocco to Egypt and Israel. In Europe it's present is limited to part of the southeast coast of Spain. In Greece it's found only on Creta Island (Cassola, 1981) and Rodi Island. Outside of the immediate Mediterranean area it is also found Syria, Iraq, Iran, Afghanistan, the Caucasus and Transcaucasia regions, Pakistan, and India. From Iran eastwards the species is represented by the subspecies armenia Cast., distinguished by the bluish color of the elytra instead of the normal bronze-greenish color. Another subspecies, described by Mandl (1959) is ssp. aida from south of the Red Sea.

Bionomics

Megacephala euphratica is found on salt flats, "chott's" and similar places. According to Croveti (1966) the larvae of this species makes holes in the ground about 6-10 mm in diameter; the soil that surrounds the hole is creased and less regular than the hole, measuring 16-17 mm in diameter. These holes are abundant in places where M. euphratica lives, and are irregularly distributed. Naturally the holes aren't the same size, as the size is dependent on the age of the larva. Those diameters stated above refer to mature larvae. The burrows that the larvae dig in the ground ends where the larvae either finds moisture or where the ground is hard to continue digging. The majority of the tunnels are about 40 cm deep.

The adults of M. euphratica are active during the night and exhibit typical behavior for those insects that live in desert climates. In the Mediterranean region, adults seem to be found from March to August.

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A KEY TO THE NEARCTIC AMBLYCHILA SAY
(COLEOPTERA: CICINDELIDAE)

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The genus Amblychila Say is endemic to North America and contains only five species which inhabit the western Great Plains, Great Basin and desert Southwest from South Dakota and southern California to central Mexico.

These large (up to 40 mm), flightless tiger beetles are nocturnal, spending the daylight hours within self-constructed burrows or rodent burrows. They are most easily collected at night with the aid of a headlamp and lantern or with pitfall traps (Dunn, 1980).

Key to Species of Amblychila Say

1. Large stature, 30-40 mm; elytra dull reddish-brown, regularly punctured over entire surface
 A. cylindriformis Say

 Stature smaller, less than 33 mm; elytra more or less shiny, completely black or only scarcely reddish; irregularly punctuate 2
2. 19-26 mm; elytra convex, without (or with only 2 slightly suggested) costae; punctuation limited and dispersed
 A. baroni Rivers

 27-33 mm; elytra with three long costae extending at least three-quarters of the way to the elytra apex 3
3. 22-28 mm; head provided with numerous setal pores (15-21); elytral punctuation between costae sparse and alineated in three or four rows A. schwarzi W. Horn

 Head provided with only two pair of setal pores 4
4. Elytra oval, shiny, with profuse foveiform punctuation: primary punctures distinct and foveiform, secondary dispersed and fine; internal elytral costae largely indistinct; labial tooth relatively wide, parallel and blunt at the extremity. Range: USA (NE Ariz., SW Colo., N. Mexico)
 A. picolomini Reiche

Elytra sub-parallel, less brilliant, the punctuation in general very dense, but less pronounced: the primary scarcely sub-foveiform, the secondary less visible and abundant; discal zone widened and largely explanate with the secondary punctuation visible and abundant; internal elytral costae as strong as the median and submarginal costae; labial tooth narrow with the point bifid. Range: central Mexico (San Luis Potosi) A. halffteri Mateu

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FOODPLANTS OF 108 NORTH AMERICAN NYMPHALIDAE (LEPIDOPTERA)

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The following is a list of 108 species of the brush-footed butterflies (Nymphalidae) and their foodplants. This list is by no means a complete list of foodplants and is intended solely as a guide to breeders and rearers. For information on Papilionidae and Citheroniinae (=Ceratocampidae) see Albaugh (1984, 1985). This list is arranged alphabetically by scientific name.

1. Adelpha bredowii Geyer (California sister)- oak, Canyon live oak (Quercus chrysolepis), Coast live oak (Quercus agrifolia), and the giant chinkapin (Chrysolepis chrysophylla).
2. Adelpha fessonia Hewitson (Mexican sister)- bedstraw (Rubiaceae).
3. Aglais milberti Godart (Milbert's tortoiseshell)- nettle, (Urtica).

4. Agraulis vanillae Linnaeus (Gulf fritillary)- passion flowers (Passiflora).
5. Anaea andria Scudder (goatweed butterfly)- goatweeds (Croton capitatum, C. linearis, and C. monanthogynus).
6. Anaea floralis Johnson & Comstock (Florida leafwing)- woolly croton (Croton linearis).
7. Anartia jatrophae Johannson (white peacock)- Ruellia (Ruellia occidentalis), water hyssop (Bacopa monniera), Jatropha manihot, and Lippia.
8. Asterocampa celtis Boisduval (hackberry butterfly)- hackberry trees (Celtis).
9. Asterocampa clyton Boisduval & Leconte (tawny emperor)- hackberry trees (Celtis).
10. Asterocampa flora Edwards (empress flora)- hackberry trees (Celtis).
11. Asterocampa leilia Edwards (empress leilia)- hackberry trees (Celtis).
12. Asterocampa louisa Stallings & Turner (empress louisa)- hackberry trees (Celtis).
13. Asterocampa montis Edwards (mountain emperor)-hackberry trees (Celtis).
14. Biblis hyperia Cramer (crimson-banded black)- Tragia (Tragia volubilis).
15. Boloria napaea Hoffmanseg (napaea fritillary)- Alpine bistort (Polygonum viviparum).
16. Charidryas harrisii Scudder (Harris' checkerspot)- aster (Aster umbellatus), and crownbeard (Verbesina helianthoides).
17. Chlosyne acastus Edwards (sagebrush checkerspot)-rabbit brush (Chrysothamnus viscidiflorus), and asters (Machaeranthera canescens and M. viscosa).
18. Chlosyne californica Wright (California patch)- golden eye (Viguiera deltoidea var. parishii), and sunflower (Helianthus annuus).
19. Chlosyne gabbii Behr (Gabb's checkerspot)- telegraph weed (Heterotheca grandiflora), and golden weed (Haplopappus squarrosus).
20. Chlosyne hoffmanni Behr (aster checkerspot)- showy aster (Aster conspicuus), and golden aster (Chrysopsis breweri).
21. Chlosyne janais Druce (Janais patch)- acanthus (Anisacanthus wrightii and Odontonema callistachus).
22. Chlosyne lacinia Geyer (bordered patch)- sunflower (Helianthus annuus), giant ragweed (Ambrosia trifida), and cowpen daisy (Verbesina encelioides).
23. Chlosyne palla Boisduval (northern checkerspot)- asters (Aster conspicuus and A. occidentalis), rabbit brush

- Chrysothamnus nauseosus, C. viscidiflorus, and C. paniculatus), showy daisy (Erigeron speciosus), Indian paintbrush (Castilleja), and goldenrod (Solidago californica).
24. Clossiana acrocneuma (uncompaghe fritillary)- snow willow (Salix nivalis).
 25. Clossiana alberta Edwards (Alberta fritillary)- mountain avens (Dryas octopetala).
 26. Clossiana astarte Doubleday (Astarte fritillary)-saxifrage (Saxifraga bronchialis).
 27. Clossiana chariclea Schneider (arctic fritillary)- arctic avens (Dryas integrifolia), and blueberry (Vaccinium).
 28. Clossiana epithore Edwards (western meadow fritillary)- violets (Viola sempervirens, V. glabella, and V. ocellata).
 29. Clossiana freija Thunberg (Freya's fritillary)- dwarf and alpine blueberry (Vaccinium caespitosum and V. uliginosum), bearberry (Arctostaphylos uva-ursi), black crowberry (Empetrum nigrum), and cloudberry (Rubus chamaemorus).
 30. Clossiana frigga Thunberg (Frigga's fritillary)- arctic avens (Dryas integrifolia), raspberry (Rubus), willows (Salix), and cloudberry (Rubus chamaemorus).
 31. Clossiana improba Butler (dingy arctic fritillary)- dwarf prostrate, and arctic willows (Salix).
 32. Clossiana kriemhild Strecker (Kriemhild fritillary)-violets (Viola).
 33. Clossiana polaris Boissduval (polaris fritillary)- mountain avens (Dryas octopetala and D. integrifolia).
 34. Clossiana selene Schiffermuller (silver-bordered fritillary)-violets (Viola).
 35. Clossiana titania Esper (Titania's fritillary)- willows (Salix), bistort (Polygonum bistortoides), and violets (Viola).
 36. Clossiana toddi Holland (meadow fritillary)- violets (Viola).
 37. Diaethria clymena Cramer (eighty-eight butterfly)-Trema (Trema).
 38. Dione moneta Hubner (Mexican silverspot)- passion flowers (Passiflora).
 39. Dryas julia Fabricius (Julia)- passion flowers (Passiflora).
 40. Dynamine dyonis Geyer (blue-eyed greenwing)-dalechamps (Dalechampia), and Tragia (Tragia ramosa).
 41. Eresia frisia Poey (Cuban crescent-spot)- shrimp plant (Belperone guttata), and acanthus (Dicliptera and Ruellia).
 42. Euphydryas chalcedona Doubleday & Hewitson (Chalcedon checkerspot)-figwort (Scrophulariaceae), plantain (Plantago), honeysuckle (Lonicera), snowberry (Symphoricarpos albus), monkey flower, and Indian

- paintbrush (Castilleja).
43. Euphydryas colon Edwards (Colon checkerspot)-snowberry (Symphoricarpos albus, and S. vaccinoides), beardtongue (Penstemon antirrhinoides and P. subseratus), and common plantain (Plantago major).
 44. Euphydryas phaeton Drury (Baltimore)- turtlehead (Chelone glabra), false foxglove (Gerardia grandiflora and G. pedicularia), plantain (Plantago lanceolata), white ash (Fraxinus americana), honeysuckle (Lonicera), Wistaria, and Viburnum.
 45. Euptoieta claudia Cramer (variegated fritillary)- violets (Viola), pansies (Viola), flax (Linum), passion flower (Passiflora), stonecrop (Sedum lanceolatum), moonseed (Menispermum), plantain (Plantago), may apple (Podophyllum), beggar ticks (Meibomia), and purslane (Portulaca).
 46. Euptoieta hegesia Cramer (Mexican fritillary)- passion flower (Passiflora foetida), and turnera (Turnera ulmifolia).
 47. Hamadryas feronia Linnaeus (white-skirted calico)- dalechampias (Dalechampia).
 48. Hamadryas fornax Linnaeus (yellow-skirted calico)- dalechampias (Dalechampia).
 49. Heliconius charitonius Linnaeus (zebra longwing)- passion flowers (Passiflora).
 50. Heliconius erato Linnaeus (crimson-patched longwing)- passion flowers (Passiflora).
 51. Hypolimnas misippus Linnaeus (mimic)- mallow (Malvaceae), purslane (Portulacaceae), figs (Ficus), and morning glory (Ipomaea).
 52. Junonia coenia Cramer (buckeye)- plantain (Plantago), gerardia (Gerardia), toadflax (Linaria), snapdragon (Antirrhinum), false loosestrife (Ludvigia), stonecrop (Sedum), monkeyflower, figwort (Schrophulariaceae), and vervain (Verbenaceae).
 53. Junonia evarete Cramer (West Indian buckeye)- black mangrove (Lippia).
 54. Limenitis archippus Cramer (viceroy)- willow (especially Salix nigra and S. sericea), poplar, aspen (Populus balsamifera, P. tremuloides, P. deltoides, and P. nigra), plum, cherry, apple, Chrysobalanus, and oak.
 55. Limenitis arthemis Drury (white admiral)- black and yellow birch (Betula lenta and B. lutea), willow (Salix), aspen (Populus), balsam poplar (Populus tremuloides and P. balsamifera), hawthorn (Crataegus), shadbush (Amelanchier), and basswood (Tilia).
 56. Limenitis astyanax Fabricius (red-spotted purple)- plum,

- willow (Salix), poplars (Populus tremuloides and P. grandidentata), apple, quince, wild cherry, hawthorn (Crataegus), gooseberry (Ribes), deerberry (Vaccinium stamineum), hornbeam (Carpinus), scrub oak (Quercus ilicifolia), and aspens (Populus).
57. Limnitis lorquini Boisduval (Lorquin's admiral)- cherry, willow (Salix), poplar (Populus), cottonwood (Populus), and chokecherry (Prunus virginiana).
 58. Limnitis weidemeyerii Edwards (Weidemeyer's admiral)- aspens (Populus), willow (Salix), and cottonwood (Populus).
 59. Marpesia chiron Fabricius (banded daggerwing)-breadfruit (Artocarpus integrifolia).
 60. Marpesia petreus Cramer (ruddy daggerwing)- figs (Ficus), and cashews (Anacardium occidentale).
 61. Melitaea elada Hewitson (Elada checkerspot)-composites (Asteraceae). and acanthus (Acanthaceae).
 62. Melitaea fulvia Edwards (fulvia checkerspot)- Indian paintbrushes (Castilleja integra and C. lanata).
 63. Melitaea gorgone Huebner (Gorgone crescent)-sunflowers (Helianthus). ragweed (Ambrosia trifida), sump-weed (Iva xanthifolia), goldeneye (Viguiera multiflora), composites (Asteraceae) asters (Aster) and oak (Quercus chrysolepis).
 64. Melitaea nycteis Doubleday (silvery crescent)-coneflower (Rudbeckia laciniata), wingstem (Actinomeris alternifolia), asters (Aster), sunflowers (Whelianthus), and crownbeard (Verbesina helianthoides and V. virginica).
 65. Melitaea theona Menetries (Theona checkerspot)- Indian paintbrush (Castilleja lanata), cenizo (Leucophyllum frutescens), and vervain (Verbena).
 66. Mestra amymone Menetries (amymone)- Tragia (Tragia).
 67. Metamorphia stelenes Linnaeus (malachite)- yerba papagayo (Blechnum brownei).
 68. Nymphalis antiopa Linnaeus (mouring cloak)- elm (Ulmus), willow (Salix), poplar (Populus), hackberry (Celtis), rose, birch, and cottonwood (Populus).
 69. Nymphalis californica Boisduval (California tortoiseshell)- buckthorns (Ceanothus).
 70. Nymphalis vau-album Denis & Schiffermuller (Compton tortoiseshell)-northern white birch (Betula alba), willow (Salix), poplar (Populus), elm, beech, and sallow.
 71. Phyciodes batesii Reakirt (tawny crescent)- blue wood aster (Aster undulatus).
 72. Phyciodes campestris Behr (field crescent)- asters (Aster and Machaeranthera).

73. Phyciodes mylitta Edwards (Mylitta crescent)- thistles (Cirsium), mud thistle (Silybum marianum), and plumeless thistle (Carduus pycnocephalus).
74. Phyciodes phaon Edwards (Phaon crescent)- fog fruit (Lippia nodiflora and L. lanceolata), and mat grass.
75. Phyciodes picta Edwards (painted crescent)- asters (Aster).
76. Phyciodes tharos Drury (pearl crescent)- asters (Aster), New England aster (Aster novae angliae), and crownbeard (Verbesina helianthodes).
77. Phyciodes vesta Edwards (vesta crescent)- tube tongue (Siphonoglossa pilosella).
78. Poladryas minuta Edwards (dotted checkerspot)-beardtongue (Penstemon).
79. Polygonia comma Harris (comma)- hops (Humulus), elm (Ulmus), nettle (Urtica), false nettle (Boehmeria), willow (Salix), Humulus lupulus, Urtica dioica and Boehmeria cylindrica.
80. Polygonia faunus Edwards (green comma)- birch (Betula), alder (Alnus), willow (Salix), currant (Ribes), wild rhododendron (Rhododendron), azalea (Rhododendron), and gooseberry (Ribes).
81. Polygonia gracilis Edwards (hoary comma)- black birch (Betula lenta possibly), currant (Ribes), gooseberry (Ribes), and willow (Salix).
82. Polygonia interrogationis Fabricius (question mark)- elm (Ulmus), hackberry (Celtis), nettle (Urtica), basswood (Tilia), hops (Humulus), and false nettle (Boehmeria).
83. Polygonia progne Cramer (gray comma)- currants (Ribes), gooseberry (Ribes), and elm (Ulmus).
84. Polygonia satyrus Edwards (satyr anglewing)- stinging nettles (Urtica).
85. Polygonia zephyrus Edwards (zephyr anglewing)- squaw currant (Ribes cereum), other currants (Ribes), elms (Ulmus), and rhododendron (Rhododendron).
86. Procllossiana eunomia Esper (bog fritillary)- alpine bistort (Polygonum vivparum), violets (Viola), willows (Salix), and Vaccinium.
87. Symrna karwinskii Geyer (Karwinski's beauty)- nettle (Urticaceae), Urticastrum, and Urera.
88. Speyeria aphrodite Fabricius (aphrodite)- violets (Viola lanceolata, V. fimbriatula, V. nuttallii, and V. primulifolia).
89. Speyeria atlantis Edwards (Atlantis fritillary)- violets (Viola adunca, V. purpurea, and V. canadensis).
90. Speyeria callippe Boisduval (Callippe fritillary)- violets (Viola pedunculata and V. nuttallii).
91. Speyeria coronis Behr (Coronis fritillary)- violets (Viola).

92. Speyeria cybele Fabricius (great spangled fritillary)-violets (Viola rotundifolia).
93. Speyeria diana Cramer (Diana)- violets (Viola).
94. Speyeria edwardsii Boisduval (Edward's fritillary)- violets (Viola nutallii).
95. Speyeria egleis Behr (Egleis fritillary)- violets (Viola adunca).
96. Speyeria hydaspe Boisduval (Hydaspe fritillary)- violets (Viola).
97. Speyeria idalia Drury (regal fritillary)- milkweed (Asclepias), thistle (Cirsium), and violets (Viola).
98. Speyeria mormonia Boisduval (Mormon fritillary)- violets (Viola adunca).
99. Speyeria nokomis Edwards (Nokomis fritillary)- blue violet (Viola nephrophylla).
100. Speyeria zerene Boisduval (Zerene fritillary)- violets V. cuneata, and V. lobata).
101. Thessalia cyneas Godman & Salvin (Cyneas checkerspot)- figwort (Scrophulariaceae), and Seymeria tenuisecta.
102. Thessalia leanira Felder (Leanira Checkerspot)- Indian paintbrush (Castilleja), and bird's beak (Cordylanthus pilosus).
103. Tritanassa texana Edwards (Texan crescent)- acanthus (Dicliptera brachiata, Jacobinia carnea, and Ruellia).
104. Vanessa annabella Field (west coast lady)- mallows (Malvaceae), cheeseweed (Malva parviflora), sidalceas (Sidalcea), hollyhocks (Althaea), globemallows (Sphaeralcea), and nettles (Urtica).
105. Vanessa atalanta Linnaeus (red admiral)- nettle (Urtica), hops (Humulus), false nettle (Boehmeria). pellitory (Parietaria), and thistle (Cirsium).
106. Vanessa cardui Linnaeus (painted lady)- thistles (Cirsium, Carduus, and Centaurea), burdock (Arctium), groundsel (Senecio), sunflowers (Helianthus), pearly everlasting (Anaphalis margaritcea), sage or wormwood (Artemisia), everlasting (Gnaphlium), hollyhock (Althaea), borage (Borago officinalis), nettle (Urtica), and mallow (Malvaceae).
107. Vanessa tameamea Eschscholtz (Kamehameha)- mamake (Pipturus albidus), nettle (Urticeae), olana (Touchardia), and opahe (Urera).
108. Vanessa virginiensis Drury (American painted lady)- mouse ear (Myosotis), everlastings (Gnaphlaium, Antennaria, and Anaphalis), and burdock (Arctium).

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FOODPLANTS OF FOUR NORTH AMERICAN DANAIIDAE AND 49 NORTH AMERICAN PIERIDAE

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The following is a two part list of four members of the milkweed butterfly family (Danaiidae) and 49 members of the whites and yellows family (Pieridae). The list is by no means complete for foodplants or species, and is intended as a guide to breeders and rearers. This list is a continuation of previous lists given for Papilionidae, Nymphalidae, and Ceratocampidae (Albaugh, 1984 and 1985).

The format of this list differs from previous lists. It is as follows: Scientific name Descriptor, Common name-foodplants. The scientific names in both sections are listed alphabetically for easy reference. (I want to thank Stephen Spomer of Lincoln, Nebraska, for suggesting this format).

If you find any errors or would like to make contributions to future lists, please feel free to contact me.

Section I. Danaidae

1. Danaus eresimus Cramer, Tropical Queen-milkweeds (Asclepias).
2. Danaus gilippus Cramer, Queen-milkweeds (Asclepias), Nerium, Funastrum, Vincetoxicum, Philabertia, Stapelia, and other related plants (Asclepiadaceae).
3. Danaus plexippus Linnaeus, monarch-milkweeds (Asclepias), dogbane (Apocynum), green milkweed (Acerates), Gossipium arboreum, and Euphorbia mauretanica.
4. Lycorea cleobaea Godart, tropical milkweed butterfly-red flowered milkweed (Asclepias curassavica), papaya (Carica), and figs (Ficus).

Section II. Pieridae

1. Anteos clorinde Godart, white angled sulphur-senna (Cassia spectabilis), and mimosa (Pithecellobium).
2. Anteos maurula Fabricius, yellow angled sulphur-legumes, and sennas (Cassia).
3. Anthocharis cethura Felder, desert orangetip-long beaked twist flower (Streptanthella longirostris), and tansy mustards (Descurainia).
4. Anthocharis genutia Fabricius, falcate orangetip-Cruciferae, rock cress (Arabis perfoliatum), bitter cress (Cardamine bulbosa), winter cress (Barbarea vulgaris), mouse ear cress (Sisymbrium thaliana), shepherd's purse (Capsella bursapastoris), and hedge mustard (Sisymbrium).
5. Anthocharis lanceolata Boisduval, gray marble-rock cress (Arabis perfoliatum), and other cresses.
6. Anthocharis sara Boisduval, Sara orangetip-crucifers (Brassicaceae), wild mustards, hedge mustard (Sisymbrium), rock cress (Arabis perfoliatum), and water cress (Nasturtium officinale).
7. Aphrissa statira Cramer, Statira- powder puff (Calliandra), and black mangrove (Avicennia germinans).
8. Appias drusilla Cramer, Florida white- capers (Capparis), and Guiana plum (Drypetes lateriflora).
9. Ascia monuste Linnaeus, giant southern white-mustards (Brassica), cabbage, pepper grass (Lepidium virginicum), saltwort (Batis maritima), spider flower (Cleome spinosa), beach cabbage (Cakile), clammy weed (Polanisia), Cruciferae, and Capparidaceae.
10. Colias alexandra Edwards, Queen Alexandra's sulphur-golden banner (Thermopsis), legumes, milk vetch (Astragalus canadensis), wild pea (Lathyrus), locoweed

- (Astragalus purshii), and lupines (Lupinus perennis, L. luteolus, and L. subcarnosus).
11. Colias behrii Edwards, Behr's sulphur-dwarf bilberry (Vaccinium caespitosum).
 12. Colias boothii Curtis, Booth's sulphur-legumes.
 13. Colias eurytheme Boisduval, Orange sulphur-legumes, alfalfa (Medicago sativa), white clover (Trifolium repens), clover (Trifolium), locoweed (Astragalus purshii), milk vetch (Astragalus canadensis), and lupines (Lupinus perennis, L. luteolus, and L. subcarnosus).
 14. Colias gigantea Strecker, great Northern sulphur-willow (Salix), and netvain dwarf willow (Salix reticulata).
 15. Colias hecla Lefebvre, Greenland sulphur-Alpine milkvetch (Astragalus alpinus).
 16. Colias interior Scudder, pink-edged sulphur- velvet leaf blueberry (Vaccinium canadense), and blueberry (Vaccinium vacillans and V. corymbosum).
 17. Colias meadii Edwards, Mead's sulphur-Alpine clovers, Parry's clover (Trifolium parryi), and whiproot clover (Trifolium dasyphyllum).
 18. Colias nastes Boisduval, Labrador sulphur-Alpine milkvetch (Astragalus alpinus), and arctic legumes.
 19. Colias occidentalis Scudder, Western sulphur- vetch (Vicia angustifolia), and white sweet clover (Melilotis alba).
 20. Colias palaeno Linnaeus, Palaeno sulphur-Arctic bilberry (Vaccinium uliginosum), and dwarf bilberry (Vaccinium caespitosum).
 21. Coliaspelione Boisduval & Leconte, blueberry sulphur-blueberry (Vaccinium), and creeping wintergreen (Gaultheria hemifusa).
 22. Colias philodice Latreille, common sulphur, alfalfa (Medicago sativa), clover, vetches (Vicia), legumes, white clover.
 23. Colias scudderii Reakirt, Scudder's willow sulphur-willow (Salix).
 24. Euchloe ausonides Hubner, creamy marble-wing-mustards (Brassica), rock cress (Arabis perfoliatum), and mountain tansy mustard (Descurainia richardsonii).
 25. Euchloe creusa Doubleday, Northern marble-wing-drabas (Draba), and crucifers (Brassicaceae).
 26. Euchloe olympia Edwards, Olympia marble-wing-rock cress (Arabis perfoliatum), hedge mustard (Sisymbrium officinale), and other mustards.
 27. Eurema दौरа Boisduval & Leconte, fairy yellow-legumes, joint vetch (Aeschynomene viscidula), and pencil flower (Stylosanthes biflora).
 28. Eurema lisa Boisduval & Leconte, little yellow-legumes, sennas (Cassia marilandica, C. fistula, and C. fasciculata), partridge pea (Chamaecrista fasciculata), clovers (Trifolium), and hog peanut (Amphicarpa).

29. Eurema mexicana Boisduval, Mexican yellow-sennas (Cassia marilandica, C. fistula, and C. fasciculata).
30. Eurema nicippe Cramer, sleepy orange-sennas (Cassia marilandica, C. fistula, and C. fasciculata), clovers (Trifolium), and other legumes.
31. Eurema nisa Latreille, Mimosa yellow-sensitive plant (Mimosa pudica).
32. Eurema palmira Poey, Palmira-tick trefoil (Desmodium canadense), and beggar ticks (Meibomia).
33. Kricogonia lyside Latreille, Lyside- Texas lignumvitae (Porliere angustifolia), and Guaiacum officinale.
34. Nathalis iole Boisduval, dwarf yellow-composites, sneezeweed (Helenium autumnale), bur marigold (Bidens pilosa), garden marigold (Tagetes), common chickweed (Stellaria media), and fetid marigold (Dyssodia).
35. Neophasia menapia Felder, pine white- pines (Pinus), firs (Abies), Douglas-fir (Pseudotsuga taxifolia), and balsam fir (Abies balsamea).
36. Neophasia terlooitii Behr, Chiricahua pine white-conifers, and Ponderosa pine (Pinus ponderosa).
37. Phoebis agarithe Boisduval, orange giant sulphur-ram's horn (Pitheclobium guadelupense), and sennas (Cassia marilandica, C. fistula, and C. fasciculata).
38. Phoebis argante Fabricius, Argante giant sulphur- (Pentaclethra maculosa).
39. Phoebis philea Linnaeus, orange-barred giant sulphur-sennas (Cassia marilandica, C. fistula, and C. fasciculata).
40. Phoebis sennae Linnaeus, cloudless giant sulphur-partridge pea (Chamaecrista cinerea), sennas (Cassia marilandica, C. fistula, and C. fasciculata), clovers (Trifolium), and other legumes (Fabaceae).
41. Pieris beckerii Edwards, Becker's white-bladderpod (Isomeris arborea), golden prince's plume (Stanleya pinnata), black mustard (Brassica nigra), and crucifers.
42. Pieris napi Linnaeus, mustard white-crucifers, cresses (Thlaspi, Arabis, and Barbarea), toothwort (Dentaria laciniata), and mustards (Brassica rapa and B. oleracea).
43. Pieris occidentalis Reakirt, Western white-crucifers (Brassicaceae), and spider plant (Cleome serrulata).
44. Pieris rapae Linnaeus, cabbage white-crucifers (Brassicaceae), nasturtiums (Tropaeolaceae), cabbage, mignonette (Reseda), and willow (Salix).
45. Pieris sisymbrii Boisduval, spring white-crucifers (Brassicaceae), desert candle (Caulanthus), jewel flower (Streptanthus), and rock cress (Arabis perfoliatum).

46. Pieris virginiensis Edwards, West Virginia white-toothwort (Dentaria diphylla).
47. Pontia protodice Boisduval & Leconte, checkered white-crucifers (Brassicaceae), bee plant (Cleome serrulata), cabbage, turnip, mustard (Brassica), wild peppergrass (Lepidium virginicum), shepherd's purse (Capsella bursapastoris), penny cress (Thlaspi), sweet alyssum (Lobularia), and fleabane (Erigeron).
48. Zerene cesonia Stoll, dogface butterfly-false indigo (Amorpha californica), lead plant (Amorpha fruticosa), clovers (Trifolium pratense, T. repens, T. incarnatum, and T. arvense), alfalfa (Medicago sativa) and soy beans.
49. Zerene eurydice Boisduval, California dogface- false indigo (Amorpha californica), clovers (Trifolium pratense, T. repens, T. incarnatum, and T. arvense), and pea (Dalea).

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ADDITIONS TO THE 1984/1985 MEMBER DIRECTORY

I. Changes of Address

- | | |
|--|----------------------------|
| <p>148-OH-2
New: c/o 281 W. Washington St.
Nelsonville, OH 45764 USA</p> | <p>William O'Donnell</p> |
| <p>173-PA-1
New: R.R. #4, Box 2295
Lebanon, PA 17042 USA</p> | <p>Sylvia Royer</p> |
| <p>208-CT-3
New: 98 Paradise Valley Rd.
Bethlehem, CT 06751 USA</p> | <p>Cherry Thurlow</p> |
| <p>137-MA-2
New: Entomology, NHB-127
Smithsonian Institution
Washington, DC 20560 USA
(137-DC-3)</p> | <p>Scott Miller</p> |
| <p>187-MN-2
New: 2359 E. 12th Ave.
North St. Paul, MN 55109 USA</p> | <p>Sue and Tom Seabolt</p> |
| <p>84-AZ-3
New: 3440 College View Court
North Las Vegas, NV 89030 USA
(84-NV-3)</p> | <p>Mark K. Hawkins</p> |
| <p>82-MI-3
New: 2107 Adrienne
Troy, MI 48098 USA</p> | <p>Richard A. Harwood</p> |

II. New Sustaining Members

Juan Carlos D'Alessandr
Buenos Aires, Argentina

III. New Supporting Dealers

American Biological Supply Co.
1330 Dillon Heights Ave.
Baltimore, MD 21228 USA

IV. New Section Advisors

Section 1- Non-insect Arthropods

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Ronald J. Priest	Dr. Eugene J. Gerberg
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	College Station, TX 77843

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	(Plecoptera)

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York, PA 17402 USA

Section 7- Coleoptera:

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see Section 3)	Baltimore, MD 21228 USA
	(Lyctidae, Bostrichidae)

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	USA (microlepidoptera;
	gypsy moth)

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Nearctic Culicidae)	

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 (pesticides)

V. New Member Directory Listings

Section 1- Non-insect Arthropods

304-CA-1
 333-NJ-3

Section 2- General Entomology

235-UT-1	50-PQ-3
91-ITA-3	17-IL-2
255-PA-1	313-WY-2
304-CA-1	316-FL-3
307-TN-1	318-ID-3
309-WI-1	320-ARG-4
325-KY-1	321-KY-1
334-POL-3	335-OH-1

Section 3- Minor Orders

130-MS-3

Section 4- Aquatic Orders

130-MS-3 341-TX-3
 127-CA-1 328-PA-2

Section 5- Orthoptera and Relatives

235-UT-1 333-NJ-3
 308-ON-1 322-FL-1

Section 6- Hemiptera/Homoptera

50-PQ-3 325-KY-1
 341-TX-3

Section 7- Coleoptera

235-UT-1	50-PQ-3	313-WY-2	328-PA-2	343-VT-3
91-ITA-3	130-MS-3	321-ARG-4	329-AUS-3	350-SWE-3
352-PQ-2	127-CA-1	323-JAP-3	334-POL-3	337-MO-2
255-PA-1	343-UT-3	325-KY-1	326-POR-3	341-TX-3

Section 8- Lepidoptera

130-MS-3 255-PA-1 311-MI-1 321-KY-1 330-ENG-3
 127-CA-1 343-VT-3 314-CA-1 324-MI-1 335-OH-1
 307-TN-1 309-WI-1 320-ARG-4 327-ON-3 328-PA-2

Section 9- Diptera

17-IL-2

Section 10- Hmenoptera

308-ON-1

Section 11- Techniques

91-ITA-3 308-ON-1 313-WY-2 321-KY-1 330-ENG-3
 352-PQ-2 311-MI-1 314-CA-1 322-FL-1 335-OH-1
 307-TN-1 318-ID-3 324-MI-1 336MO-2 327-ON-3
 343-UT-3 350-SWE-3

Section 12- Applied Entomology

17-IL-2 343-UT-3 322-FL-1 352-PQ-2
 318-ID-3 324-MI-1

Names and addresses:

17-IL-2 Donald Baumgartner
 150 S. Walnut
 Palatine, IL 60067 USA

Research on biogeography, taxonomy, and bionomics of Nearctic and Neotropical Calliphoridae; minor research interest in Culicidae. Will correspond, exchange and determine.

50-PQ-3 Gontran Drouin
 50 Principale
 Ste Henedine, Dorch.
 Quebec, CANADA GOS 2RO

Cerambycidae (worldwide); will correspond, exchange and make determinations.

91-ITA-3 Cesare Iacovone
 Via Giacomo Noventa No. 12
 Scala I, int. 3
 00143- Roma, ITALY

Carabidae (only Carabinae) and Cicindelidae: taxonomy, systematics, ecology, biology, and faunal distributions (worldwide). Will correspond and exchange.

- 127-CA-1 Derrick L. Marquis
4002 Colorado Ave.
Turlock, CA 95380 USA

Coleoptera, Scarabaeidae, Dynastinae; Lucanidae, Cerambycidae (world wide); Lepidoptera: Saturniidae, Sphingidae (world wide); Odonata (U.S.). will correspond and exchange.

- 130-MS-3 Bryant Mather
213 Mt. Salus Rd.
Clinton, MS 39056 USA

Lepidoptera, Neuroptera, Trichoptera, and Cicindelidae, especially of Mississippi. Will correspond, exchange, make determinations, and loan material for serious scientific studies.

- 235-UT-1 David Allred
111 E. 700 S.
St. George, UT 84770 USA

Interested in all aspects of entomology; working on study of mantid parasites; willing to correspond and exchange, also to meet with anyone collecting in southern Utah (Washington Co.).

- 255-PA-1 Ryan A. Bridge
4329 Old Orchard Rd.
York, PA 17402 USA

North American Lepidoptera: Saturniidae Lycaenidae, (rearing, life cycle study and collection); Coleoptera: Cicindelidae and Scarabaeidae. Will correspond, exchange and make determinations.

304-CA-1 Sean Larrson
23711 Pasatiempo Lane
Harbor City, CA 90710 USA

4-H Entomology Project, 4 years; general entomology and scorpions.

307-TN-1 Heather K. Hood
3508 Blow Dr.
Knoxville, TN 37920 USA

Balsam wooley Adelgia - Smokey Mountains - gypsy moth - Eastern U. S.; Lepidoptera - gardens used to attract; Japenese beetles - life styles and controls.

308-ON-1 Ryan Marshall
7 Basin Court
Nepean, ON K2H 8P2
CANADA

Interests include: Ichneumonidae, Mantidae, Phasmatidae and Pelecinidae.

309-WI-1 Chad Long
2014 South 102nd Street
West Allis, WI 53227 USA

Interested in all insects, especially Lepidoptera

311-MI-1 Brenda Maher
663 Detroit Street
Howell, MI 48843 USA

Lepidoptera of Michigan.

313-WY-2 Donna Marie Field
Entomology Department
Coll. of Agric., Box 3354
University of Wyoming
Laramie, WY 82071 USA

Working on genetics of endemic populations of mountain pine beetle (Coleoptera: Scolytidae) in Wyoming.

314-CA-1 Michael Bain
19161 Ridgeview Road
Villa Park, CA 92667 USA

Interested in identification of moths and collecting techniques, especially baits and traps. Willing to buy and exchange.

316-FL-3 Ross H. Arnett, Jr.
Florida State Collection of Arthropods
P.O. Box 1269
Gainesville, FL 32602 USA

American insects; beetles of the world; natural history writing.

318-ID-2 Scott Kerbs
627 Elm #24
Moscow, ID 83843 USA

Interested in insect control and research.

320-ARG-4 Juan Carlos D'Alessandro
Barragan 688
7408 Buenos Aires
ARGENTINA

Interested in trapping and corresponding in sections 4, 5, 6, 7, 8, 9, and 10.

321-KY-1 Renee E. Williams
Box 118
Battletown, KY 40104 USA

Insect habitats; rearing in controlled environments.

322-FL-1 Kermit Hemmert
State Route 2, Box 687
Newberry, FL 32669 USA

Interested in relationship between insects and fire or other disturbed habitats.

- 232-JAP-3 Toshiyuki Ichikawa
2-1-17, Ohji-honcho, Kita-ku
Tokyo, JAPAN

Scarabaeidae, Passalidae and Lucanidae (worldwide).

- 324-MI-1 Katie Essner
5535 Whitneyville S.E.
Alto, MI 49302 USA

Collecting, behavior and raising Lepidoptera.

- 325-KY-1 Steve Haines
R #3, Box 387E
Russellville, KY 42276 USA

Collects unusual specimens; 4-H entomology.

- 4-POR-3 Tristao Branco
Rua de Camoes, 788, 2oDto
P-4000 Porto, PORTUGAL

Scarabaeioidea: systematics and faunistics.

- 327-ON-3 Irene Trigg
246 County Blvd.
Thunder Bay, Ontario
P7A 7N1 CANADA

*General collector of worldwide Lepidoptera;
interested in behavior, distributions and extinctions.*

- 328-PA-2 Terence Lee Scheifer
107 Newkirk Ave.
Reading, PA 19607 USA

Cerambycidae and Cicindelidae of Pennsylvania.

- 329-AUS-3 Dr. G. F. Bornemissza
78 Nelson Rd.
Hobart, TAS 7005
AUSTRALIA

*Coleoptera: sexual dimorphism, polychromism, and
polymorphism; Ecology: role of Lamellicornians in
recycling nutrients; ecology of dung beetles.*

330-ENG-3 Sati J. Patel

St. Dabeoc's Cottage, North Stow
nr. Bury St. Edmunds
Suffolk, ENGLAND (UK)

Lepidoptera: Arctiidae, Syntomidae, Limacodidae, Sphingidae, and Saturniidae, breeding and rearing; high altitude entomology; regional variation. Willing to correspond and exchange.

333-NJ-3 Ruth R. Ralston

Box M-2, Main P.O.
Hoboken, JN 07030-0002 USA

Interested in all insects and relatives, especially katydids and tree crickets (singing insects).

334-POL-3 Dr. Z. Stebnicka

Polish Acad. Sci., Inst. Syst.
and Exp. Zool.
ul Stawkowska 17
31-016 Krakow, POLAND

Scarabaeidae: Aphodiinae (systematics and zoogeography); Tribe Aphodiini (Palaerctic and Oriental Regions), Aegialiini (worldwide), Eupariini (Oriental and Australian Regions); general zoogeography and comparative morphology of the mouth organs (scarabaeidae of the world).

335-OH-1 Randy Plona

7458 Sunrise Oval
Middleburg Heights, OH 44130 USA

Life history of saturniids.

336-MO-2 Milan Hrabovsky

3014 Longfellow
St. Louis, MO 63104 USA

Taxonomy and behavior of Cerambycidae (worldwide). Willing to exchange, correspond, make determinations and lead field trips.

341-TX-3 Thomas N. Greer
6300 Round Rock, Apt. 2106
Plano, TX 75023 USA

Carabidae and aquatic beetles; beetles of north Texas.

343-UT-3 Jay B. Karren
Utah State University
UMC 49
Logan, UT 84322 USA

Coleoptera: Chlamisidae, Chrysomelidae, Cicindelidae and Cerambycidae; applied entomology: taxonomy and pesticides.

350-SWE-3 Willy Kronblad
Skogsvagen 10 Ekenassjon
S-574 00 Vetlanda
SWEDEN

Buprestidae and Cerambycidae.

352-PQ-2 Pierre Belanger
806 Bellevue
Ste. Foy, Quebec
G1V 2R3 CANADA

Nearctic and European Cerambycidae, Scarabaeidae, Elateridae, Carabidae, Buprestidae, Curculionidae, Tenebrionidae and some other small coleopteran families; photography and biology/ecologies of species in this order.

HELP! HELP! HELP! HELP!

I have the following directory listing, but I lost the name and address from the mailing address. Will the rightful owner please contact me at Y.E.S. headquarters? Thank you.

Youth member . . . Primary interests: Coleoptera, Lepidoptera & Aquatic Insects . . . especially: Coleoptera: Scarabaeidae, Dynastinae; Lucanidae; Cerambycidae; Lepidoptera: Saturniidae; Sphingidae; and, Odonata; all families. Will correspond and exchange.

Trading Post

WANTED: Cerambycidae from all over the world in exchange for specimens from Europe and the Soviet Union. Elvira Barchet, 6740 Clybourn Ave., #242, North Hollywood, CA 91606. Telephone (213) 761-3764.

FOR SALE OR EXCHANGE: Cocoons of A. luna, A. io lutheri, and C. promethea. SASE for prices. Will also accept desirable papered butterflies with data in exchange for cocoons. Larry J. Kopp, R. Box 30. Klingerstown, PA 17941.

FOR EXCHANGE: Will exchange many species of butterflies from Mayalasia-Philippines, Taiwan, some from Africa, Peru, Brasil. and Europe, all in A1 quality, for A1 specimens from other countries (USA, Canada, Central America, South America, Australia, Indonesia, India, etc.). Exchange preferred, but can also buy. Please write to Patrick M. Malesieux, 87, rue Delhay 59 148 Flines les Raches, FRANCE

WANTED: To purchase or exchange worldwide Hymenoptera; especially Ampulicidae (cockroach wasps), Sphecius (cicada killers), Polorus bee and wasp killers, Scoliidae and other large or unusual bees. Robert B. Parks, Jr. 10335 Restful Court, Santee, CA 92071 USA.

TO EXCHANGE OR PURCHASE: N.A., Neotropical Lepidoptera ova- pupae and cocoons. Offer in exchange fine exotic material. M. Zappalorti, Sr. 123 Androvette Street. Staten Island, NY 10309 USA.

WANTED: Worldwide Cicindelidae in trade for worldwide Lepidoptera Willing to give several different or same species depending on type of Cicindelidae. All letters welcome Contact: Ryan Bridge, 4329 Old Orchard Rd., York, PA 17402.

WANTED: Information on how to receive Atticus atlas formosanus ovae, larvae, or pupae. Contact: Ryan Bridge, 4329 Old Orchard Rd., York, PA 17402. (All letters answered.)

WANTED: Cicindelidae and Carabidae (Carabus, Cychrus, Scaphinotus, Calosoma, Anthinae only) species and literature. Worldwide beetles available of all families. Cesare Iacovone, Via G. Noventa #12, Scala I - int. 3, 00143 Roma. ITALY.

WANTED: Live larvae of any tiger beetles and live true katydids, both female and male. Will nick up anywhere and pay for the catch and phone call. Glenn Firebaugh, 3636 Hoiles, Toledo, Ohio 43612. (419) 478-8314.

WANTED: Correspondence to exchange information on common indoor spiders. Will identify specimens from the urban-suburban areas of your city (daddy-long-legs not included). Write to: Steven Gades, 1410 West Dunkerton Rd., Waterloo, IA 50703 USA.

FOR SALE: Large selection of papered Malaysia Butterflies, beetles, and other insects, all of A1 quality with data. Free catalog available from: DECO ENTERPRISE, P.O. Box 155, TAIPING, Malaysia.

HELP AVAILABLE: To Y.E.S. members, ages 17 and up, collecting in the vicinity of Oviedo, Florida, northeast of Orlando. Housing, microscope, and library available with local Y.E.S. member. For more information, contact the Y.E.S. Trading Post.

FOR SALE: Antheraea polyphemus cocoons. Abundant supply. 80¢ includes postage; discount for large orders. Write: Jeff Miller, 550 Conifer Way, Ashland, OR 97520.

WANTED: Diapheromera femorata and Megaphasma denticrus eggs. Egg cases of Mantis religiosa, Stagmomantis carolina, and Tenodera aridifolia. Write to Jeff Miller, 550 Conifer Way, Ashland, OR 97520.

WANTED: Cocoons of any Saturniid moths. Write to: Jeff Miller, 550 Conifer Way, Ashland, OR 97520.

WANTED: Ovae and pupae of Lepidoptera, especially Saturniidae, Papilionidae, and Nymphalidae. Willing to buy. Send lists and prices to: David Albaugh, 9 Columbia Avenue, Jamestown, RI 01835 USA.

WANTED: All books, new or used, pertaining to entomology, especially, Lepidoptera, Coleoptera, Orthoptera, and general entomology. Send lists and prices to: David Albaugh, 9 Columbia Avenue, Jamestown, RI 02835 USA.

FOR SALE: Insect Pins: Std. Black, Elephant, Stainless Steel, Minutens and Label Pins. Sizes 000 thru 7 available. For complete list write: Ianni Butterfly Enterprises, P.O. Box 81171, Cleveland, OH 44181.

FOR SALE: Worldwide collectible butterflies, beetles and rare insects, named with data. For subscription to butterfly and beetle price lists send \$5.00 to Ianni Butterfly Enterprises, P.O. Box 81171, Cleveland, OH 44181.

WANTED: Blow flies (Calliphoridae) on loan or for exchange from various regions of the U.S. (particularly the southwest), as part of a study of the distribution of these insects. All material sent will be identified and returned, except for a few specimens retained for the I.D. service. Blow flies are easily collected from raw fish or carrion baits. Send material to Donald Baumgartner, 150 S. Walnut St., Palatine, IL 60067.

FOR SALE: Neotropical insects from northern Central America, or will EXCHANGE same for Catocala (Lepidoptera: Noctuidae) especially from Europe, N. Africa, USSR, Central Asia, China or Korea. Also, SELL glassine envelopes in 3 convenient sizes; take fountain pen and stamp pad ink well. Eduardo C. Welling M., Apartado Postal 701, Merida, Yucatan, Mexico.

NEW SUMMER CATALOG, with up to 25% lower prices listed, now available. Specialists in Morpho (45 spp.), European butterflies (250 spp.), Parnassius (45 spp.) and general butterflies from around the world. Small orders welcome. Send \$1 cash/check or \$6 for a years monthly catalogs/newsletters. State interests. Transworld Butterfly company (YES), Apartado 6951, San Jose, COSTA RICA, C.A. (2/2)

FOR SALE OR TRADE: 100 Luna and 100 Cecropia cocoons. WANTED: Saturniid and spinxy livestock. Let me know what you have! R. Olmstead, P.O. Box 132, Byron, NY 14422 USA. (2/2)

FOR SALE: Worldwide Lepidoptera. Have a good selection of species from various parts of the Amazon region, South America, such as: Morpho, Papilio, Caligo, Agrias, Prepona, Heliconidae and many more. Top quality, papered with complete data. Good prices. Satisfaction guaranteed. Free price list sent on request. Thomas Greager, R.D. #6 Box 56-B, Greensburg, PA 15601 USA. (2/2)

EXCHANGE OR PURCHASE: Cicindelidae and Carabidae, worldwide. All letters answered. Gary A. Dunn, Dept. of Entomology, Michigan State University, East Lansing, MI 48824-1115 USA. (2/2)